

Remarks

Claims 15 - 19 and 30 - 36 are pending. Favorable reconsideration is respectfully requested.

Claim 18 has been rejected under 35 U.S.C. § 112 ¶s 1 and 2. Applicants respectfully traverse this rejection. Claim 18 has been amended to recite "R¹" rather than "R³", a typographical error. The Office indicates that the "Applicants' specification describes performing silylation either with (I) or (II) but not with both compounds." Applicants respectfully direct the Office's attention to page 5, lines 21 - 22, where it is indicated that I (silane) and II (organosiloxane) can be used alone or in any desired mixtures, the same language which is contained in claim 15. Claim 15 requires hydrophobicization with a silane, an organosiloxane, or a mixture thereof. Claim 17 recites that a silane is used, thus limiting hydrophobicization to a silane, thus further limiting claim 15. Claim 18 has been amended to depend from claim 15, and requires a mixture of silane and organosiloxane, thus also further limiting claim 17. Withdrawal of the rejection of claim 18 under 35 U.S.C. § 112 ¶s 1 and 2 is respectfully solicited.

Claims 15 - 17, 19, and 30 - 36 have been rejected under 35 U.S.C. § 112 ¶2, because of the language with respect to silylating agents I) and II). The claims are addressed to one skilled in the art. Applicants respectfully submit that one so skilled immediately recognizes that silylation can be performed with only silanes I), with only organosiloxanes II), or with a mixture of silanes I) and organosiloxanes II), as described in the specification. To expedite prosecution, the claim has been edited slightly for clarity. It has also been amended to ensure that the phrase "under anhydrous conditions" is interpreted to mean the silica is fumed silica. The claim continues to be of the same scope. Withdrawal of the rejection of these claims under 35 U.S.C. § 112 ¶2 is respectfully solicited.

Claims 15 - 17, 19, and 30 - 36 have been rejected under 35 U.S.C. § 103(a) over Endo et al. JP 04298538 A ("*Endo*"), for which an abstract has been supplied.

Endo is directed to polyester films containing colloidal silica particles treated with a coupling agent containing an unsaturated group which presumably reacts during transesterification to form the polyester, which occurs at high temperature, and thus assures bonding of the particles to the polyester matrix. As a result, the sliding coefficient of friction is reduced as compared to particles not having been reacted with the coupling agent.

Endo does not teach or suggest the claimed invention.

The claims require a contact angle θ in air for water of less than 180°C , a density of surface silanol groups between 0.9 and 1.7 SiOH/nm^2 , and a methanol number less than 30. *Endo* discloses none of these claim limitations, nor does he teach or suggest them.

The particles claimed are fumed silica particles prepared under anhydrous conditions, *i.e.* fumed, or "pyrogenic" silica. As is well known to those skilled in the art, due to the very high temperatures involved in the process, surface silanol groups condense to form siloxy linkages, resulting in a very low SiOH content. The maximum silanol group density is from 2 - 2.5 SiOH/nm^2 , and the primary particle size is generally quite small, under 100 nm. *Endo* discloses a range of particle sizes and silanol group content, but as one skilled in the art can readily tell, these ranges confirm that the silica used by *Endo* is not fumed silica, but colloidal silica, which is prepared in water. There is no way that fumed silica can have even 3 SiOH/nm^2 , yet *Endo* discloses values up to 30 SiOH/nm^2 , which may be achieved only in colloidal silica. The particle size range is also typical for solution grown (colloidal) silica, extending up to $5 \mu\text{m}$ (5000 nm)!

In the Example in the abstract, for instance, colloidal silica with 8.0 SiOH/nm^2 is reacted in water with vinyl triethoxysilane to allegedly block 54.5% of silanol groups, leaving 3.64 SiOH/nm^2 . A silica with this huge number of silanol groups will be hydrophilic, not partly hydrophobic. For example, fumed silica, which as only 2.5 SiOH/nm^2 at most, is very hydrophilic.

Moreover, as explained in detail in the prior prosecution, including responses, Applicant's Appeal Brief, and the Declaration of Dr. Gottschalk-Gaudig, the property limitations in the claims are all individual limitations, and each one must be met.

Endo does not disclose any contact angle θ , nor would this be of interest to *Endo*, since the particles he uses are for an entirely different purpose - incorporation into a thermoplastic, where contact angle with water is completely irrelevant.

Endo does not disclose any surface silanol group content. The Office relies on a calculation (not disclosed by *Endo*), where 30 - 70% of surface silanol groups are blocked. However, there is no indication of the actual range claimed, and there is no way of knowing whether *Endo* also requires a large amount of surface silanol groups in his product. For example, *Endo* may require 70% of groups to be blocked at high SiOH contents and less at lower SiOH content, and may require a certain residual amount to be compatible with the polar polyester matrix. This is suggested by his example, and a full and accurate English language of the underlying Japanese language document has not been provided.

Even the process of reacting the coupling agent of *Endo* is completely different from that of Applicants, this reaction taking place in aqueous solution, where a significant amount of the coupling agent can be expected to hydrolyze and condense with itself.

Since *Endo* does not disclose, teach or suggest any of the limitations of the claims previously discussed, *Endo* clearly does not render the invention obvious.

Nor can the missing claim limitations be inferred, in other words, based on inherency. In rejections based on inherency, the inherency must be certain, *Ex parte McQueen*, 123 USPQ 37 (POBA 1958), *Ex parte Cyba*, 155 USPQ 756 (POBA 1966); and must be a necessary result, and not merely a possible result. *Ex parte Keith*, 154 USPQ 320 (POBA 1966). Recent Federal Circuit cases have re-echoed these principles, requiring that missing descriptive material be “necessarily present” and not merely “probably” or “possibly” present, *In re*

Robertson, 49 USPQ2d 1949 (Fed. Cir. 1999), and must meet a “strict identity test” for anticipation. *Trintec Industries, Inc. v. Top-U.S.A. Corporation*, 63 USPQ2d 1597 (Fed. Cir. 2002).

Here, as well documented in the prosecution history, there is no direct relationship between such limitations as contact angle, methanol number, carbon content, and surface silanol groups.

Second, and most importantly, the principles of inherency do not apply to rejections under 35 U.S.C. § 103. Inherency only applies to rejections for anticipation under 35 U.S.C. § 102. See, e.g. *In re Shetty*, 195 USPQ 753, 757 (CCPA 1977). In rejections for obviousness under 35 U.S.C. § 103(a), the reference must disclose, teach, or suggest all the claim limitations. *Endo* does not do so. Moreover, silence on the part of a reference cannot infer that a limitation is contained in the reference. *In re Evanega*, 4 USPQ 2d 1249, 1251 (Fed. Cir. 1987).

Withdrawal of the rejection of the claims over *Endo* is respectfully solicited for the reasons given above.

Claim 16 discloses silylating with an organosiloxane, and claim 18 requires both a silane and an organosiloxane. Neither of these claimed embodiments are disclosed, taught, or suggested by *Endo*.

Claim 19 restricts R¹ in the silane to the enumerated alkyl, aryl, and aralkyl species. *Endo* does not disclose, teach or suggest any of these groups. *Endo* employs an addition-polymerizable vinyl group.

Claim 31 requires the partly hydrophobic silica to have a carbon content of 0.1 to 0.5 weight percent per each 100 m²/g of surface area. *Endo* discloses no surface areas at all, and no weight percentage of carbon content.

Claim 33 requires specific silylating agents, none of which are disclosed, taught, or suggested by *Endo*.

New claim 37 has been added, support for which may be found on page 18, lines 3 - 10. No new matter is added. *Endo* does not disclose, teach or suggest that his colloidal silicas are capable of stabilizing w/o or o/w emulsions, nor is this inherent, even if inherency applied.

All the above claims are separately patentable. If any rejection is to be maintained over *Endo*, Applicants request that an accurate English translation be provided of the underlying document, per the Commissioner's Notice with respect thereto in the Office Gazette. Applicants respectfully request receipt of the translation well before any adverse second or final office action so that its contents may be discussed and made of record.


Applicants submit that the claims are now in condition for Allowance, and respectfully request a Notice to that effect. If the Examiner believes that further discussion will advance the prosecution of the Application, the Examiner is highly encouraged to telephone Applicants' attorney at the number given below.

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Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,
Torsten-Gottschalk-Gaudig et al.

By 
William G. Conger
Reg. No. 31,209
Attorney/Agent for Applicant

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BROOKS KUSHMAN P.C.
1000 Town Center, 22nd Floor
Southfield, MI 48075-1238
Phone: 248-358-4400
Fax: 248-358-3351